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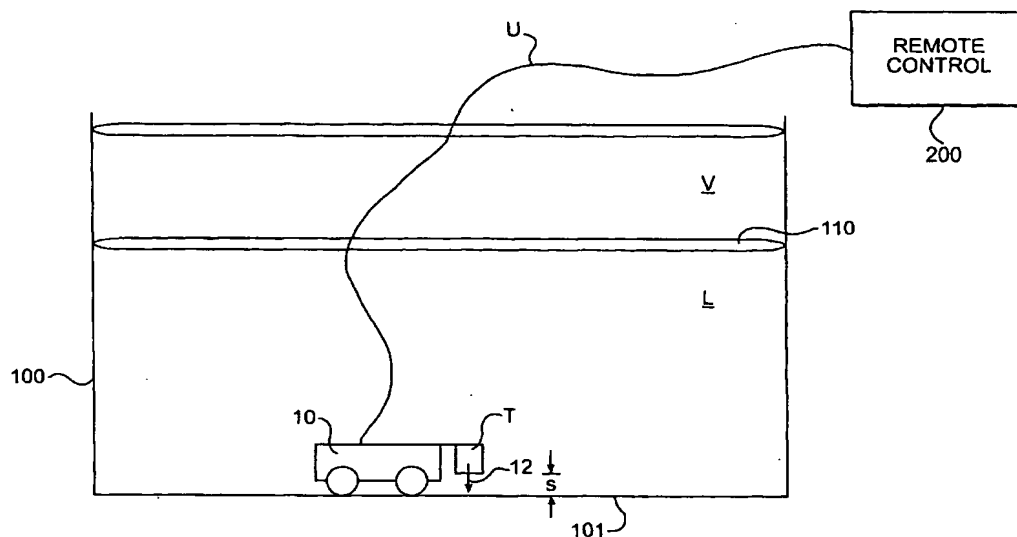
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(54) Title: **BROADBAND LONG PULSE ULTRASONIC INSPECTION**



(57) Abstract: A robotic ultrasonic inspection vehicle is provided with one or more transducers which are driven by a long, broadband excitation pulse for insonifying a sample subject to inspection. Preferably the long, broadband excitation pulse is chirped. The robotic vehicle also includes a drive circuit for coupling the excitation pulse to the transducer. Data associated with the excitation pulse is used to gate off the drive circuitry at an appropriate time. The robotic vehicle may traverse a combustion prone region and therefore electrical parameters may be limited to intrinsically safe levels. However electrical parameters may safely be converted to higher levels so long as the conversion is inhibited to occur only after the vehicle has left a combustion prone region and entered a region of minimal risk of combustion.

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